An Apodized Pupil Lyot Coronagraph for the Gemini Planet Imager Instrument

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The Gemini Planet Imager instrument is a multi-institution project which consists of an Extreme Adaptive Optics system, an Apodized Pupil Lyot Coronagraph, an Integral Field Unit and an active calibration system. The AMNH group is designing and building the Apodized Pupil Lyot Coronagraph, chosen for this instrument. This type of coronagraph is basically a classical Lyot coronagraph with an upstream pupil apodization, based on mathematical properties of the prolate spheroidal functions. An APLC produces a dramatic improvement over the classical Lyot coronagraph. We have identified appropriate technologies to manufacture the required components. We will present the current status of the design and laboratory infrared testing results.